SUPPORT NOTE

Addressing Dropped Sessions and Slow Validation

Introduction

The RDS Intranet product was conceived in 2000 to take advantage of the development process and tools provided by cutting-edge web and database technologies of the time. The idea was to leverage these tools to build a new graphical user interface and a RDMS to control Reedholm's core instrumentation. Other options were considered, but the chosen approach accelerated GUI development, and provided a flexible platform to handle data needs of the application.

In the intervening years, a number of factors have caused a decline or interruption in performance. These include, but are not limited to, dropped sessions and slow validation. While Reedholm is always on the lookout for RDS application issues that affect performance, the overwhelming majority of detracting agents exist outside of the Reedholm Intranet application software. They have been put into two categories for this note: customer induced problems and Microsoft induced problems.

Customer Induced Problems

The standard Reedholm system is delivered in one of two configurations, Enterprise Edition (Figure 1) or Lab Edition (Figure 2). In Figures 1 and 2, italics identifies customer defined hardware, software, and settings. Other items are provided and supported by Reedholm. Customer elements may or may not be compatible with the Reedholm system and it is impractical for Reedholm to take responsibility for their effects. Reedholm can assist with troubleshooting, and comment on previous experiences, but the customer needs to take the lead when debugging effects of customer supplied elements on system uptime.

Within an individual Server, Client or Lab computer, customers often install hardware and software that disrupt communication between key components of the RDS Intranet product. Those include anti-virus packages, firewalls, monitoring, proxies, and applications developed internally or by other vendors.

Customer written User Functions are also capable of causing unwanted behavior.

On the networking side, there can be many switches, other computers, domains, IP conflicts, group policies, scripts, hardware, cabling, noise, etc. A single malfunctioning or misconfigured component/setting in a customer network is quite capable of disrupting communications between Server and Client in an Enterprise Edition installation, causing significant slow down in performance and/or dropped sessions.
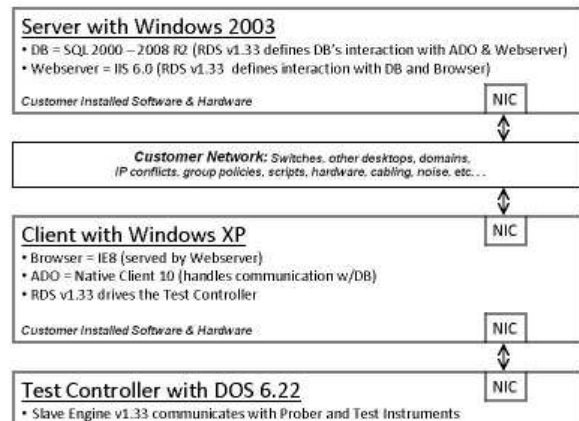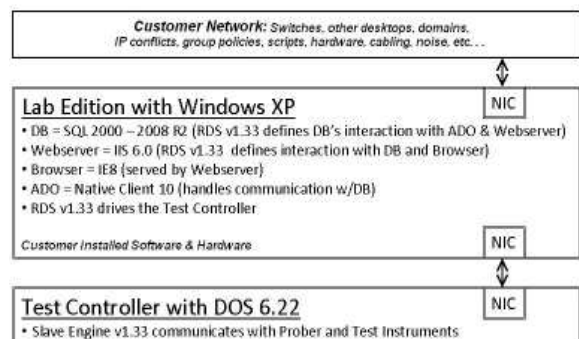

Figure 1: Enterprise Edition

Figure 2: Lab Edition

Microsoft Induced Problems

The customer environment is not the only source of problems; the fickle nature of the Microsoft ecosystem can also impact the performance of RDS Intranet. By relying on Microsoft infrastructure for operating systems, browsers, web servers, databases and communications, RDS Intranet is subject to the whims of Microsoft that include frequent updates to improve their own products or to remove features. Such changes often surprise Reedholm customers when the updates cause perfectly functioning Reedholm systems to cease operating properly. Just as insidious, Microsoft's lack of action to address certain known bugs results in the need for workarounds to keep RDS Intranet running.

Reedholm relies on the partnership and constructive feedback of its customer base to help identify and debug Microsoft induced problems.

Dropped Sessions

RDS Intranet Help System identifies three ways that the application will log out a user. Two are from direct actions of the user but the third is due to server stops or starts, including starts and stops of the web-server (IIS).

Intermittent or interrupted communications to the server can have the same effect on the application as when the server is stopped or started. On systems using IIS 6.0, incorrect isolation mode settings can also caused dropped sessions.

Automatic Windows Updates have been known to cause dropped sessions, most notably when the update includes a reboot of the system. It is recommended that automatic updates be set for Download and Notify on both the Client and Server computers.

Antivirus software has been known to modify the attributes of files during scans or back-ups. If the affected files are in the root Reedholm folder on the Server, then IIS will restart the web server. It is recommended that a system's antivirus be configured to skip the Reedholm folders.

Reedholm has documented a situation where a customer had physically moved a Server into a different building and then started dropping sessions. Assigning a more lightly trafficked line to the connection between the buildings ultimately solved the problem by greatly reducing the likelihood of missed communication.

Validation

Test plan validation depends on reliable communication between the Client and Server. Incorrect ADO (ActiveX Data Object) selection, improper browser settings, and faulty hardware have all affected validation performance. Reedholm has documented at least two customer cases where ADO issues had inflated validation times by an entire order of magnitude: from 55 sec to 12 min, and from 3min to 30 min.

Validation times are also known to increase slowly over the lifetime of a given server. This subtle slow-down is due to the accumulation of changes and updates to the OS and other installed software, which gradually increases the Server's load. As a result, RDS Intranet is left with fewer resources for validation and other tasks. Periodic upgrades of the Server hardware are recommended to avoid this situation.

ADO Provider

An ActiveX Data Object provider such as SQL Native Client from Microsoft facilitates communications from the RDS Intranet application to the SQL Server. Improper installation, or use of the incorrect version, slows validation.

Microsoft SQL Server 2008 R2 Native Client (aka: Native Client 10) is found under Install Instructions:

http://www.microsoft.com/en-us/download/details.aspx?id=16978

Additionally, the Reedholm server name must be formatted in the application link without the FQDN (Fully Qualified Domain Name):

http://www.reedholm.com/ecrs/e0921200901.pdf

IIS

The RDS Intranet application uses Internet Information Services as its web server. Improper installation or use of an incorrect version may cause dropped sessions or other errors.

Windows XP installations use IIS 5.1.

For Windows 2003 x32, IIS 6.0 is configured to run in IIS 5.0 isolation mode:

http://www.microsoft.com/technet/prodtechnol/WindowsServer2003/Library/IIS/ed3c22ba-39fc-4332-bdb7-a0d9c76e4355.mspx?mfr=true

For Windows 2003 x64, IIS 6.0 is configured to run in 32-bit mode with ASP.NET 2.0 (32-bit):

Http://support.microsoft.com/kb/894435

Network Hardware

Network hardware issues can interrupt or slow the performance of Reedholm software. Reedholm Enterprise Edition installations depend on a stable network connection between the Reedholm server and the test client computer.

A malfunctioning adapter can cause dropped packets, packet collisions, intermittent connections or slow connections.

A bad network cable can cause issues that present similarly to a bad network adapter. Bad cables can be the result of twisted or broken wires, which can cause crosstalk, or improper grounding if the cable is shielded.

Network Policy

Network policy can cause interference due to security implementations made after the Reedholm application has been installed on a domain.

- Access Control Lists
- Group Policies
- Logon\Logoff scripts
- User permissions

Additional Software

Additional software installed on a test client computer, a Reedholm Enterprise Edition server or a Lab Edition server may interfere with the RDS Intranet application.

Antivirus software may slow down the connection to the Reedholm application if the antivirus is set to monitor and scan running applications.

Firewall software is often bundled with antivirus software and can block ports needed for communication with the Reedholm Server.

Browser modifications or proxies can interfere with the Reedholm application.

Customer written User Functions run within the Reedholm application are also capable of causing unwanted behavior.

Troubleshooting with a Lot List

There are many different approaches to troubleshooting a complex system. One of the most basic techniques used for debug is to create a lot list and look for commonalities.

The lot list should cover both good and bad lots, and include details that will distinguish individual lots from each other while tracking abnormal behavior. A sample lot list might include the following information:

- Lot name
- Name of test plan for lot
- When was the lot started? (Specific date and time)
- When did the lot end or crash? (Specific date and time, or at least when someone noticed it had crashed)
- How did the lot end? (Normal, error codes, forced logoff, locked lot, etc.)
- How many wafers were planned for the lot?
- How many die per wafer for the lot?
- How many wafers were successfully tested in the lot?
- After what wafer and die number did the lot crash?

Troubleshooting with Event Logs

Comparison of the lot list and event logs from the Event Viewer may highlight how unwanted behavior correlates to a particular event or combination of events. It may also indicate a method to recreate the behavior on demand, which can lead to the formation of a corrective action.

The Event Viewer is found through Control Panel - Performance and Maintenance - Administrative Tools - Event Viewer. Both the Client and Server computers have multiple types of event logs. Double clicking on an entry within a log will give additional information about that specific event.

Manual activation may be required to log certain events in the Event Viewer. For example, notifications of script errors on test clients are activated in Internet Explorer through Tools - Internet Options - Advanced and checking the option to "Display a notification about every script error".

Additional information about the Event Viewer may be found through Microsoft Support:

http://support.microsoft.com/kb/308427

Customers who are experiencing performance issues in RDS Intranet are highly encouraged to track their lots and to check the Event Viewer logs.

Conclusion

The RDS Intranet application provides a web browser based user interface with a RDMS to control Reedholm's core instrumentation, but its performance can suffer from issues introduced by the customer environment and by the Microsoft ecosystem. This support note suggests a number of common targets to check and techniques to try while debugging a system with poor performance.

Reedholm can assist with troubleshooting and comment on previous experience with customer-induced problems, but ultimately the customer needs to take the lead in debugging their own systems.

Reedholm relies on the partnership and constructive feedback of its customer base to help identify and debug problems induced by Microsoft software.

While Reedholm cannot control or know of every element associated with a particular system installation, the Reedholm development team is taking steps to reduce the vulnerability of future products to Microsoft's environment. RDS 2.0 will avoid problems associated with using a browser-based design by disassociating the user interface from Microsoft Internet Explorer and Microsoft Internet Information Services (web server).